



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
- 1200 Sixth Avenue
Seattle, Washington 98101

**Explanation of Significant Differences for
Revised Remedial Action at the Bunker Hill Superfund Site
Shoshone County, Idaho**

January 1996

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Bunker Hill Superfund Site, Shoshone County, Idaho
Explanation of Significant Differences (ESD)

Introduction:

Site Name and Location

Bunker Hill Superfund Site, Shoshone County, Idaho

Lead and Support Agencies

The U.S. Environmental Protection Agency is the lead agency on post-Record of Decision (ROD) changes, and the State of Idaho Department of Health and Welfare, Division of Environmental Quality (DEQ) is the support agency.

Statutory Citation for an ESD

In Section 117(c) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), provisions are made for addressing and documenting changes to the selected remedy that occur after the ROD is signed. This ESD documents the changes to the selected remedy in accordance with CERCLA Section 117. Additionally, since significant, non-fundamental changes are being made to the original remedy, documentation procedures specified by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR §300.435(c)(2)(i), have been followed.

Need for an ESD

During Remedial Design activities, EPA and DEQ identified several portions of the original remedy that may warrant change. Using engineering and cost analyses, EPA and DEQ determined that changes to the original remedies for the Zinc Plant, the A-1 Gypsum Pond, and the solid-waste landfill east of Deadwood Gulch, have the potential to save significant cost, while maintaining or increasing the level of human health and environmental protection, and decided that an ESD was appropriate.

Administrative Record

This ESD will become part of the Administrative Record for the Bunker Hill Superfund Site, as required by 40 CFR §300.825(a)(2), will be available to the public at the following locations:

Kellogg Public Library
16 W. Market
Kellogg, Idaho 83837

U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Idaho Department of Health and Welfare
Division of Environmental Quality
1410 North Hilton
Boise, Idaho 83706-1253

Site History

The Bunker Hill Mining and Metallurgical Complex Superfund Site encompasses 21 square miles along Interstate 90 in the Silver Valley area of Shoshone County in northern Idaho. The Site includes the now inactive Bunker Hill Mine Operations Area and the former metallurgical and smelting facility (together called the Bunker Hill Complex), and the cities of Kellogg, Pinehurst, Smelterville, and Wardner (total population of approximately 5000).

The site has widespread contamination throughout the South Fork Coeur d'Alene River basin from mine tailings, emissions from the Bunker Hill smelter complex, and blowing dust from tailings piles and other barren areas. Barren hillsides and open areas within the site contribute to erosion and blowing dust problems. Extensive soil contamination remains in the residential areas of five communities as well as the surrounding non-populated areas. There are high lead levels in house dust. There is also extensive heavy metals contamination of ground water and surface water because of historical mining activities and continued leaching of metals from mine and mill wastes.

Mining for lead, zinc, silver, and other metals began in the Coeur d'Alene Mining District in 1883. Prior to the widespread use of impoundments to contain milling waste products, tailings were often disposed of in local surface waters. Years of flooding of the South Fork of the Coeur d'Alene River caused the tailings to be spread throughout the valley floor. In 1917, the Bunker Hill lead smelter began producing lead, cadmium, silver, and alloys of these heavy metals. In 1928, an electrolytic zinc plant was also put into production. Smelter and zinc plant operations resulted in fugitive and stack emissions of metals and sulfur dioxide.

In September 1973, a fire in a pollution control device (bag house) at the lead smelter operated by Gulf Resources and Chemical Corporation (Gulf) resulted in a dramatic increase in emissions. In the first three months of 1974, approximately 73 tons of lead per month were emitted into the environment.

In 1974, the average blood-lead level for children under 12 years of age was 65 micrograms of lead per deciliter of blood. This average is over six times the Centers for Disease Control and Prevention (CDC) current level of concern. Excessive amounts of lead in the body has been linked to impaired neuro-behavioral development, kidney damage, anemia, and hypertension, especially in children.

Health studies were initiated and emergency measures were taken at the Site in the late 1970s. Tall stacks were constructed by Gulf to reduce contaminant concentrations in the area. The Bunker Hill facility was closed in 1981. However, due to the human health and environmental concerns, the Bunker Hill Superfund site was listed on the National Priorities List in 1983.

Seventeen potentially responsible parties (PRPs) for site contamination were identified in the 1980s, including Gulf. A Remedial Investigation/Feasibility Study (RI/FS) was initiated to study the site contamination and possible remedies for the contamination. On September 30, 1992, EPA issued the Record of Decision (ROD) covering the non-populated portions of the site and sent Special Notice letters to the PRPs to begin consent decree negotiations for remedial actions for the entire site. The affected community is generally supportive of the 1992 ROD and looks forward to completion of the remedial actions at the site.

The selected remedy for the Zinc Plant, the A-1 Gypsum Pond, and the solid waste landfill east of Deadwood Gulch as described in the 1992 ROD, includes the following components:

- The Zinc Plant closure will include material from the Zinc Plant, Phosphoric Acid/Fertilizer Plant areas (excluding the fertilizer warehouse), contaminated soils in the vicinity of the Zinc Plant and upper Government Gulch, and material, debris, and contaminated soils from the fertilizer plant. Surface and ground water control measures, such as cut-off walls and collection trenches, are to be used to route upstream water around the closure area. Any water passing through the closure area will be collected downstream and treated prior to discharge. Any of the materials destined for the Zinc Plant closure could also be placed in the Lead Smelter Closure if the Zinc Plant closure is at capacity.
- The A-1 Gypsum Pond, located in Magnet Gulch, will be removed and relocated to the Central Impoundment Area (CIA) prior to closure of that area.
- The solid waste landfill, located east of the gulch south of the mine/mill crusher plant, will receive a low permeability soil cover system. Capping this landfill in-place is expected to

reduce potential ground water loading from this source.

Description of Significant Differences

The modified remedies for these three areas are discussed in this section.

Zinc Plant Closure

The ROD calls for a closure area in Government Gulch to house the demolition debris and contaminated materials from the Zinc Plant and Phosphoric Acid/Fertilizer Plant areas. EPA and the DEQ have determined that these materials will be placed in the Lead Smelter closure, where it will be consolidated with demolition debris and other contaminated materials from the Lead Plant closure, as well as contaminated debris and material from other locations in the site. As part of the remediation of Government Gulch, a natural stream channel will be developed from the upper reaches of the gulch down to Bunker Creek.

It should also be noted that monitoring data and computer modeling determined that the natural stream channel location may pass through the location currently occupied by the Fertilizer Plant Warehouse. As a result, EPA is currently awaiting information from Shoshone County on potential land and structure purchasers, as well as agreements for implementation and maintenance of remedial actions that would be required if the warehouse is not demolished. Such remedial actions may include protective soil barriers over contamination and ground water cut-off trenches/slurry wall structures.

If no purchaser is located that will agree to implementation and maintenance assurances, the warehouse will be demolished during the cleanup of the Phosphoric Acid Plant. A final decision on this issue is expected in the coming months. Demolition of this structure would not constitute a significant or fundamental change to the ROD, so an ESD or ROD amendment would not be required under CERCLA.

A-1 Gypsum Pond

A portion of this material pile, originally scheduled for placement into the CIA, will now be relocated from Magnet Gulch to the Lead Smelter closure. Movement of approximately 70,000 cubic yards of gypsum pile material will reduce the amount of slag placed in the Lead Smelter closure, since the gypsum will be used as fill material. The remainder of the gypsum will be disposed of in the CIA, as originally planned.

Solid Waste Landfill

Instead of capping the material in-place, some or all of the solid waste landfill material may be relocated to the Lead Smelter closure area for consolidation with other contaminated material. Any materials left in-place will be capped, as necessary, to protect the environment. The location of the solid waste landfill will be graded to a natural contour and replanted with native vegetation. Surface water flows will be returned to their natural conditions to the extent practicable.

A summary of the differences between the original remedies and the modified remedies for these items is shown below:

Original Remedy

Placement of Zinc Plant demolition debris and contaminated material in a Zinc Plant closure, located in upper Government Gulch.

Relocation of A-1 Gypsum Pond from Magnet Gulch to the CIA.

Capping of solid waste landfill in-place with a soil cap. with a soil cap.

Modified Remedy

Placement of Zinc Plant demolition debris and contaminated material in the Lead Smelter closure. Restoration of Government Creek to "natural drainage."

Relocation of a portion the A-1 Gypsum Pond from Magnet Gulch to Lead Smelter closure. Remainder of gypsum to be disposed of at the CIA.

Relocation of some or all of the solid waste landfill to Lead Smelter closure for disposal. Regrading and revegetation of landfill's former location. Cap any remaining material as originally plan, for environmental protection.

Basis for Significant Differences

The rationale for the changes to the original remedy are discussed in this section.

Zinc Plant Closure

Placement of contaminated materials and demolition debris from the Zinc Plant and Phosphoric Acid/Fertilizer Plant areas in the Lead Smelter closure is not a fundamental change from the original remedy. The same or greater level of protectiveness to human health and the

environment that the material would have had in a Zinc Plant closure will be achieved or surpassed in the Lead Smelter closure, as the design characteristics and performance requirements for the two different closure areas are the same. Additionally, disposing of contaminated material in one location, instead of two, will centralize waste management activities, making long-term management of materials more efficient.

Cost evaluations were prepared to compare the capital construction and operations and maintenance (O&M) costs for a two closure scenario (separate closure areas for the Lead Smelter Complex and the Zinc Plant) and for a single closure area at the Lead Smelter Complex. These cost evaluations indicated that, for the level of accuracy the costs were developed (feasibility level of +50%, -30%), the two cap remedy would cost approximately \$23,201,000. The one cap remedy would cost \$22,980,000. However, a single closure area at the Lead Smelter Complex will have the estimated O&M costs at \$400,000, compared with the two cap O&M cost of \$879,000. Thus, the modified remedy is expected to be significantly less expensive than the original remedy.

The ROD states that "...materials destined for the Zinc Plant closure could also be placed in the Lead Smelter Closure if the Zinc Plant Closure is at capacity." (1992 ROD, p. 9-9) So, placement of Zinc Plant material in the Lead Smelter closure will not be fundamentally different from the original plan for the Zinc Plant closure. Additionally, the ROD states that the Lead Smelter closure can accept "...other materials/soils determined during Remedial Design to be appropriate to consolidate in this area." (1992 ROD, p. 9-9) Thus, the placement of this Zinc Plant material in the Lead Smelter closure will not be fundamentally different from the original plan for the Lead Smelter, either.

A-1 Gypsum Pond

Movement of a portion of this material to the Lead Smelter closure, instead of the CIA, is not a fundamental change from the ROD. The intent of the original remedy is for placement of the gypsum beneath a low permeability cap. Placement under the low permeability cap at the Lead Smelter closure will be consistent with the nature of the original remedy.

Deposition at the Lead Smelter will also reduce the haul distance required for relocation of the gypsum as the Magnet Gulch is closer to the Lead Smelter than the CIA. Thus, the cost of transporting the pond material to its final location will be less since the cost of transporting the material is dependent upon the total distance traveled. In addition, the need for placement of slag into the Lead Smelter closure as fill material will be reduced by the use of gypsum as fill material. Thus, the cost of transporting slag may also decrease, since the total amount of slag transported is less than the original remedy's estimated cost.

Placement of the A-1 Gypsum Pond into the Lead Smelter closure is not precluded by the ROD. In fact, on page 9-9, the ROD states "...other materials/soils determined during Remedial Design to be appropriate to consolidate in this area" can be consolidated in the Lead Smelter closure. (1992 ROD)

Solid Waste Landfill

Movement of some or all of this material to the Lead Smelter closure, instead of capping in-place, is not a fundamental change from the ROD. The intent of the original remedy is for disposal of the solid waste landfill beneath a low permeability cap. Placement under the low permeability cap at the Lead Smelter closure will be consistent with the nature of the original remedy. The level of protectiveness will be higher with this material placed in the Lead Smelter closure, with its low permeability cap and leachate collection system. The original remedy only includes a soil cap, with no means to collect leachate. Any material not removed will be capped at its current location, as necessary, to protect the environment.

Placement of some of the Deadwood Gulch Solid Waste Landfill into the Lead Smelter closure is not precluded by the ROD. In fact, on page 9-9, the ROD states "...other materials/soils determined during Remedial Design to be appropriate to consolidate in this area" can be consolidated in the Lead Smelter closure. (1992 ROD)

Support Agency Comments

State of Idaho comments for this document have been addressed. The comments were directed toward the Solid Waste Landfill remedy. It should be noted that a clarification was made regarding the solid waste landfill's present location. The landfill referenced by the State in their comments is not located in Deadwood Gulch. The landfill in question, which may be relocated to the Lead Smelter closure, is located near the ore crusher area. In addition, EPA included mention of the potential demolition of the Fertilizer Plant Warehouse in this document, as recommended by the State of Idaho. As a result of EPA's incorporation of the support agency comments, DEQ has concurred with this ESD.

Affirmation of the Statutory Determinations

The modified remedy satisfies the provisions of CERCLA Section 121. The lead and support agencies believe that the modified remedy remains protective of human health and the environment, complies with federal and state requirements identified in the original ROD as ARARs at the time the original ROD was signed, and is cost-effective.

Public Participation Activities

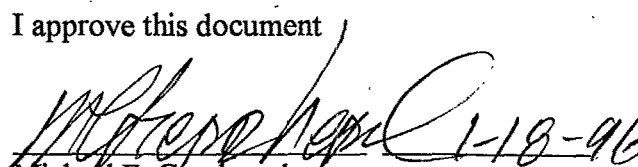
A fact sheet, which notifies the community of the ESD and summarizes the ESD for the community, will be released. In addition, a newspaper advertisement will be published in a newspaper circulated in the affected community. The ESD is ready for public review and can be found in the Administrative Record for the site, located at the Kellogg Public Library, Idaho DEQ in Boise, and EPA Region 10 in Seattle.

If this document is acceptable, please sign on the appropriate line and date the signature.

I do not approve this document

Michael F. Gearheard
Associate Director
Environmental Cleanup Office

I approve this document



Michael F. Gearheard
Associate Director
Environmental Cleanup Office